

Study Guide

Student Edition
Pages 306–312**Rectangles**

A **rectangle** is a quadrilateral with four right angles. Since both pairs of opposite angles are congruent, a rectangle is a parallelogram and has all the properties of a parallelogram. The following list summarizes the properties of a rectangle.

- Opposite sides are congruent.
- Opposite angles are congruent.
- Consecutive angles are supplementary.
- Diagonals bisect each other.
- All four angles are right angles.
- Diagonals are congruent.

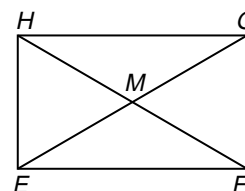
Example: Quadrilateral $EFGH$ is a rectangle. If $EM = 5x + 1$ and $HF = 42$, find the value of x .

Since the diagonals of a rectangle bisect each other and are congruent, you know that $5x + 1 = \frac{1}{2}(42)$.

$$5x + 1 = 21$$

$$5x = 20$$

$$x = 4$$



Quadrilateral $RSTV$ is a rectangle. Find the values of x and y .

1. $VW = 2x + y$

$WS = 36$

$RS = x - y$

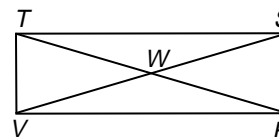
$VT = 9$

2. $VR = y$

$TS = x + 11$

$VT = y - 3x$

$RS = x + 2$



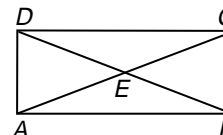
Quadrilateral $ABCD$ is a rectangle. Find the value of x .

3. $m\angle DAC = 4x + 8$

$m\angle CAB = 5x - 8$

4. $AC = x^2$

$DB = 6x - 8$



Determine whether $ABCD$ is a rectangle. Justify your answer.

5. $A(10, 4)$, $B(10, 8)$,
 $C(-4, 8)$, $D(-4, 4)$

6. $A(3, 7)$, $B(10, 7)$,
 $C(11, 12)$, $D(4, 12)$